REMARKS

The Final Office Action dated July 30, 2003, has been received and reviewed.

Claims 38-69 are currently pending and under consideration in the above-referenced application. Each of claims 38-69 stands rejected.

Claim 44 has been canceled without prejudice or disclaimer.

Reconsideration of the above-referenced application is respectfully requested.

Drawing Correction

A substitute sheet of drawings which includes corrections to FIG. 18 is included in the Appendix. FIG. 18 has been revised to reposition the lead line from reference numeral --88--, to change --88-- to --88B-- on the far right side of drawing, and to delete two occurrences of reference numeral "58". It is respectfully submitted that these corrections are fully supported by the as-filed specification and, therefore, do not introduce new matter into the above-referenced application.

Rejections Under 35 U.S.C. § 103(a)

Each of claims 38-69 stands rejected under 35 U.S.C. § 103(a).

M.P.E.P. § 706.02(j) sets forth the standard for a rejection under 35 U.S.C. § 103(a):

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Purportedly Admitted Prior Art in View of Hashimoto

Claims 38-55, 59-63, and 67-69 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over purportedly admitted prior art (hereinafter "APA"), in view of teachings from

U.S. Patent 6,410,366 to Hashimoto (hereinafter "Hashimoto").

The Office asserts that the above-referenced application admits that, prior to the filing date of the above-referenced application, it was known in the art to disposed semiconductor dice with centrally aligned bond pads on substrates in a flip-chip fashion.

Hasmimoto also teaches use of flip-chip connection techniques to secure semiconductor dice with centrally aligned bond pads to larger scale substrates. More specifically, Hashimoto teaches forming bumps 11 on the active surface of a semiconductor die 10 which has bond pads 12 that are arranged along a straight line L. FIG. 1A; col. 5, lines 24-58.

The bumps 11 on the semiconductor die 10 are positioned so as to align with corresponding bumps 21 of a substrate 20 as the semiconductor die 10 is positioned face-down (*i.e.*, in a flip-chip fashion) over the substrate 20. FIG. 1B; col. 6, line 60, to col. 7, line 17. When positioned against each other, a bump 11 of the semiconductor die 10 and a corresponding bump 21 of the substrate 20 form a support. FIG. 1B; col. 7, lines 18-33.

Hashimoto also teaches that, following the positioning of a semiconductor die 10 over a substrate 20, an anisotropic conductive material 40 may be disposed therebetween and cured, permanently securing the semiconductor die 10 and substrate 20 to one another. Col. 7, line 39, to col. 8, line 7. As the type of bonding taught in Hashimoto is permanent, rather than the temporary electrical connections (typically under a biasing load) that are made when a semiconductor die is oriented over a test substrate, it is readily apparent that Hashimoto does not teach or suggest that the substrate 20 thereof may comprise a test substrate.

Independent claim 38, as proposed to be amended, recites a semiconductor device that includes a substrate and at least one stabilizer. The substrate of independent claim 38 includes contact pads that are exposed at a surface thereof. The contact pads are arranged in at least one substantially linear relationship positioned at or proximate a centerline of the substrate. The contact pads are configured to communicate with corresponding test pads of a test substrate upon disposing said substrate face-down over said test substrate. The at least one stabilizer of the semiconductor device of independent claim 38 protrudes from the surface of the substrate and is configured to at least partially stabilize an orientation of the semiconductor device upon disposal thereof face-down over the test substrate. In addition, the at least one stabilizer of amended

independent claim 38 includes a plurality of superimposed, contiguous, mutually adhered layers of the same material.

It is respectfully submitted that neither the APA nor Hashimoto includes any teaching or suggestion of a stabilizer that includes a plurality of at least partially superimposed, contiguous, mutually adhered layers of the same material, as is recited in amended independent claim 38. Rather, the APA lacks any teaching or suggestion of stabilizers, while the bumps 11 of Hashimoto appear to be single-layer structures. Although Hashimoto teaches that the bumps 11 that protrude from the surface of a semiconductor die are positioned to align with corresponding bumps 21 on a substrate 20, Hashimoto lacks any teaching or suggestion that bumps 11 and 21 may be mutually adhered to one another.

Accordingly, it is respectfully submitted that a *prima facie* case of obviousness cannot be established against the subject matter recited in amended independent claim 38 merely on the bases of the APA and teachings from Hashimoto. It is, therefore, respectfully submitted that, under 35 U.S.C. § 103(a), amended independent claim 38 is allowable over the APA and Hashimoto.

Each of claims 39-43 and 45-52 is allowable, among other reasons, for depending either directly or indirectly from claim 38, which is allowable.

Claim 48, as proposed to be amended, is also allowable since neither the APA nor Hashimoto teaches or suggests a stabilizer which is elongated in a direction parallel to a plane in which the substrate is located.

Claim 49 is additionally allowable because neither the APA nor Hashimoto includes any teaching or suggestion of a semiconductor device which includes a semiconductor wafer with stabilizers protruding from a surface thereof. Instead the teachings of Hashimoto are limited to singulated semiconductor dice 10 with bumps 11 protruding therefrom.

Claim 51 is further allowable since the APA and Hashimoto both lack any teaching or suggestion of a semiconductor device that comprises a chip-scale package with at least one stabilizer protruding from a surface thereof. Rather, the teachings of Hashimoto are limited to bare semiconductor dice 10 with bumps 11 protruding therefrom.

It is proposed that claim 44 be canceled without prejudice or disclaimer, rending the rejection thereof moot.

Independent claim 53 is drawn to a test substrate that includes a substrate and at least one stabilizer protruding from a surface of the substrate. The substrate includes test pads, which are exposed at a surface thereof and are arranged in at least one substantially linear relationship. The test pads are also configured to communicate with corresponding contact pads of a semiconductor device which is to be disposed face-down over the substrate. The at least one stabilizer is configured to at least partially stabilize the semiconductor device upon disposal thereof face-down over the test substrate.

It is respectfully submitted that the substrate 20 of Hashimoto is a carrier substrate, not a test substrate. This is evident from Hashimoto's teaching that the substrate 20 is configured to have a semiconductor die 10 permanently secured thereto (*e.g.*, by way of anisotropically conductive material 40 – col. 7, line 41, to col. 8, line 7), rather than temporarily secured thereto, as would be the case if substrate 20 were a test substrate. Accordingly, it is respectfully submitted that Hashimoto does not teach or suggest each and every element of independent claim 53.

Each of claims 54, 55, and 59 is allowable, among other reasons, for depending either directly or indirectly from claim 53, which is allowable.

Independent claim 60 recites an assembly of a semiconductor device and a test substrate. The test substrate of the assembly includes a plurality of test pads exposed at a surface thereof and arranged in at least one substantially linear relationship. The semiconductor device of the assembly includes a plurality of contact pads exposed at a surface thereof and arranged in at least one substantially linear relationship which is located at or proximate a centerline of the semiconductor device. The contact pad-bearing surface of the semiconductor device faces the test pad-bearing surface of the test substrate, with corresponding contact pads and test pads in communication with one another. In addition, at least one stabilizer is disposed the test substrate and the semiconductor device.

Again, the substrate 20 that is taught in Hashimoto is not a test substrate, as recited in independent claim 60. Rather, it is carrier substrate, which is a very different type of component from a test substrate.

Claims 61-63 and 67-69 are each allowable, among other reasons, for depending from claim 60, which is allowable.

APA in View of Hashimoto and Grigg

Claims 56-58 and 64-66 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over APA, in view of teachings from Hashimoto and U.S. Patent Application Publication 2001/0051395 of Grigg (hereinafter "Grigg").

According to 35 U.S.C. § 103(c), prior art under 35 U.S.C. § 102(e), (f), or (g) may not be used in a rejection under 35 U.S.C. § 103(a) if the art and the application being considered are owned by the same person or entity.

Grigg, which has a priority date (February 24, 2000) that precedes the filing date (June 8, 2000) of the above-referenced application but a filing date (December 13, 2001) that follows the filing date of the above-referenced application, qualifies as prior art to the above-referenced application under 35 U.S.C. § 102(e).

Moreover, the above-referenced application and Grigg are owned by the same entity – Micron Technology, Inc. The assignment for the above-referenced application is recorded at Reel 010870, Frame 0828, while the assignment for Grigg is recorded at Reel 010633, Frame 0405.

Accordingly, the rejection of claims 56-58 and 64-66 is improper under 35 U.S.C. § 103(c). Therefore, withdrawal of the 35 U.S.C. § 103(a) rejections of these claims is respectfully requested.

ENTRY OF AMENDMENTS

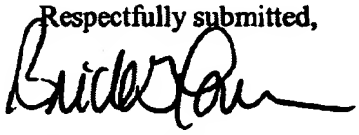
It is respectfully submitted that the amendments that have been proposed herein should be entered, as none of the proposed amendments introduces new matter into the above-referenced application or would require a further search. Further, as the proposed amendments to the claims

narrow the number of issues that remain for purposes of appeal, it is respectfully requested that, in the event that they are not entered prior to the filing of a Notice of Appeal in the above-referenced application, they be entered when a Notice of Appeal is filed in the above-referenced application.

CONCLUSION

It is respectfully submitted that each of claims 38-43 and 45-69 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,



Brick G. Power
Registration No. 38,581
Attorney for Applicant
TRASKBRITT, PC
P.O. Box 2550
Salt Lake City, Utah 84110-2550
Telephone: 801-532-1922

Date: September 30, 2003

BGP/dlm:djp
Attachment: Replacement Sheet
Annotated Sheet Showing Changes

Document in ProLaw

TITLE: STRUCTURES FOR STABILIZING SEMICONDUCTOR DEVICES RELATIVE TO TEST SUBSTRATES AND METHODS FOR FABRICATING THE STABILIZERS
Inventor: Salman Akram
Serial No.: 09/590,527
Docket No.: 2269-4101US
Annotated Sheet Showing Changes

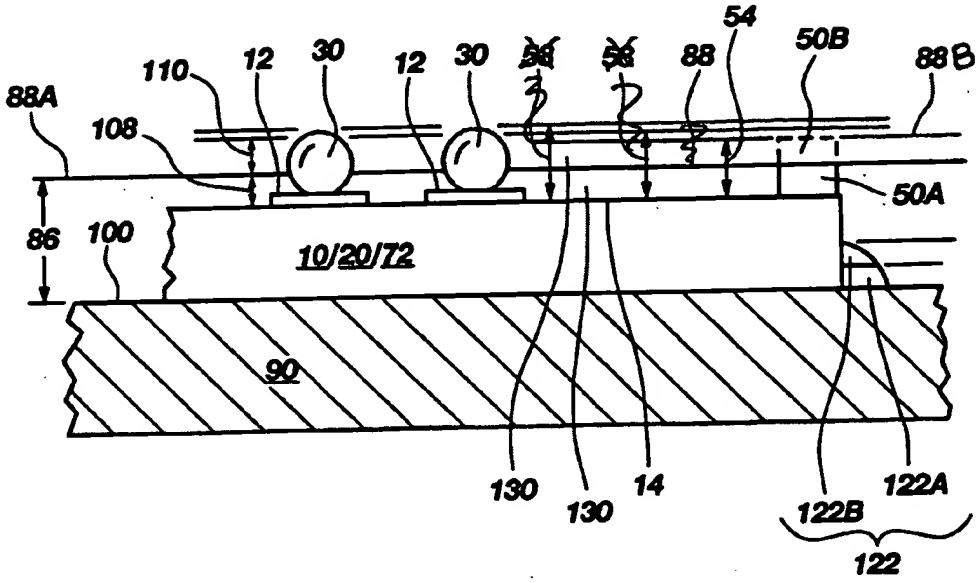


Fig. 18